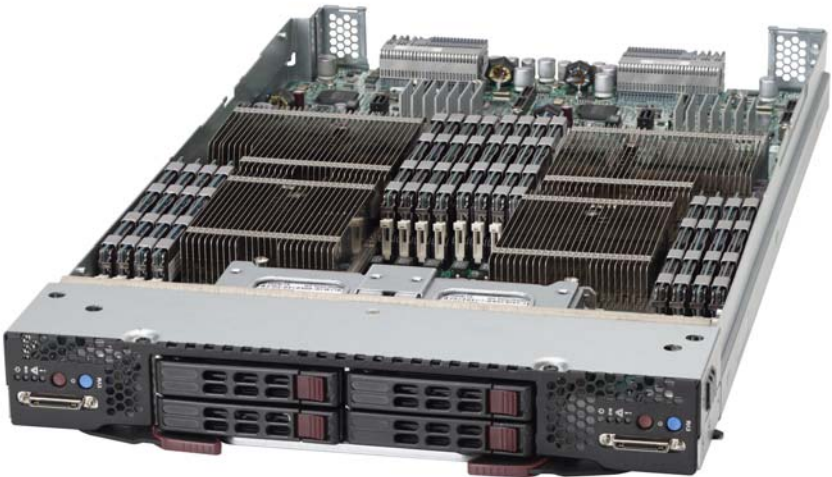# SUPERMICRO®

SBA-7222G-T2
Blade Module

User's Manual

Revison 1.0a

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

Super Micro Computer, Inc. ("Supermicro") reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software and documentation, is the property of Supermicro and/or its licensors, and is supplied only under a license. Any use or reproduction of this product is not allowed, except as expressly permitted by the terms of said license.

IN NO EVENT WILL SUPERMICRO BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, SPECULATIVE OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, SUPERMICRO SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Super Micro's total liability for all claims will not exceed the price paid for the hardware product.

FCC Statement: This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

California Best Management Practices Regulations for Perchlorate Materials: This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate for further details.

WARNING: HANDLING OF LEAD SOLDER MATERIALS USED IN THIS PRODUCT MAY EXPOSE YOU TO LEAD, A CHEMICAL KNOWN TO THE STATE OF CALIFORNIA TO CAUSE BIRTH DEFECTS AND OTHER REPRODUCTIVE HARM.

Manual Revison 1.0a

Release Date: May 18, 2011

Preface

About this Manual

This manual is written for professional system integrators, Information Technology professionals, service personnel and technicians. It provides information for the installation and use of Supermicro's SBA-7222G-T2 Blade Module. Installation and maintenance should be performed by experienced professionals only.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the SBA-7222G-T2 Blade Module and describes its main features.

Chapter 2: System Safety

You should familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SBA-7222G-T2 Blade Module.

Chapter 3: Setup and Installation

Refer to this chapter for details on installing the SBA-7222G-T2 Blade Module into the SuperBlade chassis. Other sections cover the installation and placement of memory modules and the installation of hard disk drives into the blade module.

Chapter 4: Blade Module Features

This chapter covers features and component information about the SBA-7222G-T2 Blade Module. Included here are descriptions and information for mainboard components, connectors, LEDs and other features of the blade module.

Chapter 5: RAID Setup Procedure

RAID setup and operations for the SBA-7222G-T2 Blade Module are covered in this chapter.

Chapter 6: BIOS

BIOS setup is covered in this chapter for the SBA-7222G-T2 Blade Module.

Appendix A: BIOS POST Codes

BIOS POST Codes for the SBA-7222G-T2 Blade Module are explained in this appendix.

Notes

Table of Contents

Notes

List of Figures

Notes

List of Tables

Notes

Chapter 1
Introduction

1-1   Overview

The SBA-7222G-T2 blade module is a compact self-contained server that connects into a pre-cabled enclosure that provides power, cooling, management and networking functions. One enclosure for the SBA-7222G-T2 blade module can hold ten blade units. Each blade module contains two "Nodes" that each are a separate and server system, providing up to the equivalent of 20 blade units in one 10-blade module enclosure.

In this manual, "blade system" refers to the entire system (including the enclosure and blades units), "blade" or "blade unit" refers to a single blade module and "blade enclosure" is the chassis that the blades, power supplies and modules are housed in.

Please refer to our web site for information on operating systems that have been certified for use with the SuperBlade (www.supermicro.com/products/superblade/).

1-2   Product Checklist of Typical Components

Your blade module ships with its mainboard already installed in its chassis. Memory, hard disk drives and the CPU must all be installed by the user after shipment. See Chapter 3: "Setup and Installation" on page 3-1 for details on installation of these components.

Aside from the blade module unit itself, the optional AOC-XEH-iN2 Mezzanine add-on card (with 10G Pass-Through or 10G Switch) may be ordered for your blade module along with the following add-on cards:

• AOC-IBH-XDD
• AOC-IBH-XDS
• AOC-IBH-XQS
• AOC-IBH-XQD

See the Supermicro website and the *SuperBlade Network Modules User's Manual* on your SuperBlade system's CD-ROM for more details on these add-on cards.

1-3   Blade Module Features

Table 1-1 lists the main features of the SBA-7222G-T2 blade module. See the proceeding section for components typically included in a blade system and other optional components. Specific details on the SBA-7222G-T2 blade module is found in Chapter 4: "Blade Module Features" on page 4-1.

Table 1-1. SBA-7222G-T2 Blade Specification Features

Mainboard	BHDGT (proprietary form factor) Blade Module Chassis Dimensions (HxWxD): 11.32" x 1.67" x 20.5"
Processors	Supports two 1944-pin G34 socket AMD Opteron 6100 series processors in each node for up to four processors per blade module. Please refer to our web site for a complete listing of supported processors.
FSB Speed	1333/1066/800 MHz speed
Chipset	AMD SR5650 & SP5100 chipset
Graphics Controller	One embedded Matrox G200eW Graphics chip with 16MB of SDRAM
BIOS	16 Mb AMI® SPI Flash EPROM BIOS
Memory Capacity	Eight 240-pin DIMM sockets per node supporting up to 128 GB of ECC Registered DDR3-1333/1066/800 SDRAM DIMMs or 32 GB of ECC Unbuffered DDR3-1333/1066/800 SDRAM DIMMs.
SATA Controller	SATA Controller SP5100 on-chip controller for four Serial ATA drives total (two per node).
Hard Drive Bays	Four (4) hot-swap drive bays for 2.5" SATA disk drives (two per node)

Processors

The SBA-7222G-T2 blade module supports up to two 1944-pin G34 socket AMD Opteron 6100 series processors in each node for a total of four.

Refer to the Supermicro web site for a complete listing of supported processors (http://www.supermicro.com/products/superblade). Please note that you will need to check the detailed specifications of a particular blade module for a list of the CPUs it supports.

Details on installation of the processor into the SBA-7222G-T2 blade module are found in Chapter 3: "Setup and Installation" on page 3-1.

Memory

The SBA-7222G-T2 blade module has eight 240-pin DIMM sockets in each node that can support up to 32 GB of ECC Unbuffered DDR3-1333/1066/800 SDRAM or 128 GB of ECC Registered DDR3-1333/1066/800 SDRAM DIMMs. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots.

Please refer to the Supermicro web site for a list of supported memory (www.supermicro.com/products/superblade). The detailed specifications for a blade module will contain a link to a list of recommended memory sizes and manufacturers.

Details on installation of memory modules into the SBA-7222G-T2 blade module are found in Chapter 3: "Setup and Installation" on page 3-1.

Storage

The SBA-7222G-T2 blade module can have four 2.5" SATA (Serial ATA) hard disk drives in front-mounted easy removable carriers, two for each node. See Chapter 3: "Setup and Installation" on page 3-1 for storage installation details.

Density

A maximum of ten blade modules may be installed into a single blade enclosure with two nodes. Each blade enclosure is a 7U form factor, so a standard 42U rack may accommodate up to six enclosures with 60 blade modules, two nodes per module, or the equivalent of 120 1U servers. With the inclusion of six CMM modules, twelve Gigabit Ethernet switches and six InfiniBand switches, this would occupy up to 144U space in a conventional 1U dual processor server configuration.

Figure 1-1 displays a view of a full rack with six blade enclosures in it, each with ten blades to an enclosure.

Figure 1-1. Full Rack of Blade Enclosures and Blade Servers

1-4   Contacting Supermicro

Headquarters

Address:	Super Micro Computer, Inc.
	980 Rock Ave.
	San Jose, CA 95131 U.S.A.
Tel:	+1 (408) 503-8000
Fax:	+1 (408) 503-8008
Email:	marketing@supermicro.com (General Information)
	support@supermicro.com (Technical Support)
Web Site:	www.supermicro.com

Europe

Address:	Super Micro Computer B.V.
	Het Sterrenbeeld 28, 5215 ML
	's-Hertogenbosch, The Netherlands
Tel:	+31 (0) 73-6400390
Fax:	+31 (0) 73-6416525
Email:	sales@supermicro.nl (General Information)
	support@supermicro.nl (Technical Support)
	rma@supermicro.nl (Customer Support)

Asia-Pacific

Address:	Super Micro Computer, Inc.
	4F, No. 232-1, Liancheng Rd.
	Chung-Ho 235, Taipei County
	Taiwan, R.O.C.
Tel:	+886-(2) 8226-3990
Fax:	+886-(2) 8226-3991
Web Site:	www.supermicro.com.tw
Technical Support:	
Email:	support@supermicro.com.tw
Tel:	+886-2-8228-1366, ext. 132 or 139

Notes

Chapter 2
System Safety

2-1 Electrical Safety Precautions

Basic electrical safety precautions should be followed to protect yourself from harm and the SuperBlade from damage:

- Be aware of how to power on/off the enclosure power supplies and the individual blades as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the blade module when removing or installing such system components as the mainboard, memory modules and processors.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease electrostatic discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and L line. It must be plugged into grounded electrical outlets. Power input requires 110-240 VAC, depending upon your power supply module.

- Mainboard Battery: This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032 Lithium 3V battery). Dispose of used batteries according to the manufacturer's instructions.

 WARNING: There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarities.

 WARNING: Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians

only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

2-2   General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperBlade clean and free of clutter.
- Place the blade module cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.
- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.
- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.
- After accessing the inside of the system, replace the blade module's cover before installing it back into the blade enclosure.

2-3   Electrostatic Discharge Precautions

Electrostatic discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards.

The following measures are generally sufficient to neutralize this difference **before** contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.
- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.
- Touch a grounded metal object before removing the board from the antistatic bag.
- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.
- When handling chips or modules, avoid touching their pins.
- Put the mainboard and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure the blade enclosure provides excellent conductivity between the power supplies, the blade modules and the mainboard.

WARNING: This product may be connected to an IT power system. In all cases, make sure that the unit is also reliably connected to Earth (ground).

2-4   Operating Precautions

Care must be taken to assure that the cover of the blade unit is in place when the blade is operating to assure proper cooling. Out of warranty damage to the blade can occur if this practice is not strictly followed.

Any drive carrier without a hard drive installed must remain fully installed in the drive bay when the blade module is operating to ensure proper airflow.

Notes

Chapter 3
Setup and Installation

3-1   Overview

This chapter covers the setup and installation of the blade module and its components.

3-2   Installing Blade Modules

Up to ten SBA-7222G-T2 blade modules may be installed into a single blade enclosure (depending upon your enclosure and blade). Blade modules with Windows and Linux operating systems may be mixed together in the same blade enclosure.

Powering Up a Blade Unit

Each blade unit may be powered on and off independently from the rest of the blades installed in the same enclosure. A blade unit may be powered up in two ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to apply power using either a CMM module, or by the use of the onboard BMC chip in the blade module.

Powering Down a Blade Unit

A blade unit may be powered down in either of five ways:

- Press the power button on the blade unit.
- Use IPMIView or the web-browser based management utility to power down (if you have Operator or Admin privileges on the CMM).
- Use SMCIPMItool when connected to the CMM to power down (if you have Operator or Admin privileges on the CMM).
- Use IPMIview or a browser connected to the onboard BMC chip to power down.
- Use SMCIPMItool to use a Command Line Interface (CLI) to the onboard BMC chip, if you have Operator or Admin privileges.

Removing a Blade Unit from the Enclosure

Although the blade system may continue to run, individual blades should always be powered down before removing them from the enclosure.

Removing a Blade Unit from the Enclosure

1. Power down the blade unit (see "Powering Down a Blade Unit" above).

2. Squeeze both handles to depress the red sections then pull out both handles completely and use them to pull the blade unit from the enclosure.

NOTE: Blade Modules can be Hot-Plugged from the enclosure.

Removing/Replacing the Blade Cover

The blade cover must be removed to access the mainboard when you need to install or remove processors, memory units, the onboard battery and so on.

Removing/Replacing the Blade Cover

1. Remove the blade unit from the enclosure (see "Removing a Blade Unit from the Enclosure" above).

2. Depress the two buttons on the cover while pushing the cover toward the rear of the blade unit. When it stops, lift the cover off the blade unit.

3. To replace the cover, fit the six grooves in the cover into the studs in the sides of the blade, then slide the cover toward the front of the blade to lock it into place.

Installing a Blade Unit into the Enclosure

Make sure the cover of the blade unit has been replaced first before installing a blade unit in the enclosure.

Installing a Blade Unit into the Enclosure

1. Slowly push the blade unit into its bay with the handles fully pulled out (see Figure 3-1).

2. When the blade stops, push the handles back in to their locked position, making sure the notches in both handles catch the lip of the enclosure (see Figure 3-2).

NOTE: Blade Modules can be Hot-Plugged into the enclosure.

WARNING: Use extreme caution when inserting a blade module into the enclosure. If the blade's power connector becomes damaged, it can damage pins on other blade bays that it is inserted into.

Figure 3-1. Inserting a Blade into the Enclosure
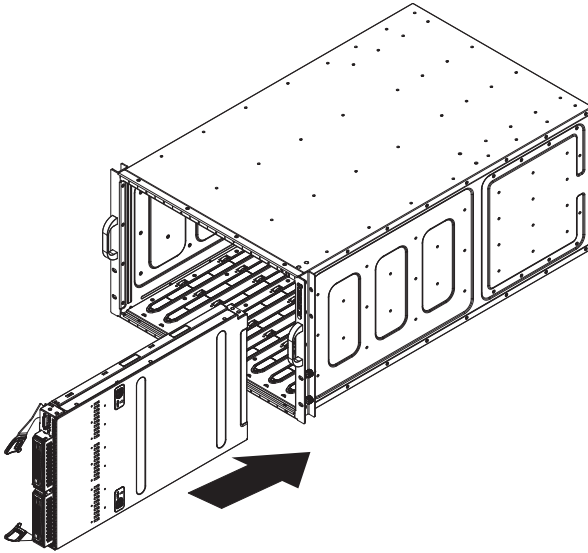
Figure 3-2. Locking the Blade into Position
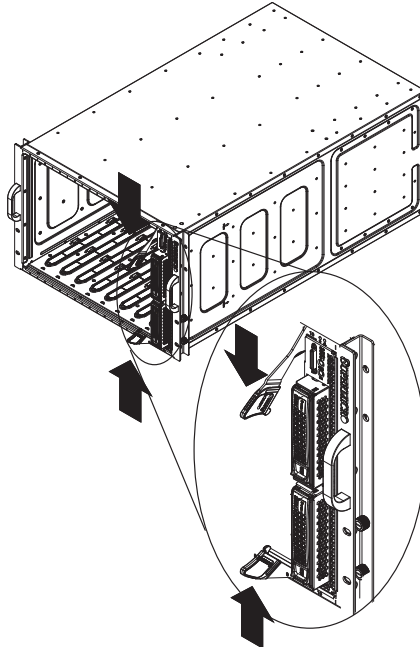
3-3   Processor Installation

One or two 1944-pin G34 socket AMD Opteron 6100 series processors may be installed to the mainboard of each node. See Chapter 1 for general information on the features of the blade unit and the Supermicro web site for further details including processor, memory and operating system support.

WARNING: This action should only be performed by a trained service technician. Allow the processor heatsink to cool before removing it.

Removing a Processor

1. Power down and remove the blade unit from the enclosure (see Section 3-2: Installing Blade Modules on page 3-1 for details).

2. Remove the cover of the blade unit (see "Removing/Replacing the Blade Cover" on page 3-2).

3. Loosen the two screws that secure the heatsink to the mainboard.

4. Remove the heatsink by *gently* rotating it back-and-forth sideways with your fingers to release it from the processor. Set the heatsink aside and upside-down so that nothing comes into contact with the thermal grease on its underside.

5. Raise the lever of the processor socket up until the processor is released from the socket, then lift the silver cover plate and remove the processor.

WARNING: This action should only be performed by a trained service technician.

Installing a Processor

1. If present, remove the protective black PnP cap from the processor socket.

2. Raise the lever of the processor socket until it reaches its upper limit.

3. Lift the silver cover plate completely up and out of the way.

NOTE: Be careful not to damage the pins protruding from the CPU socket.

4. Align pin 1 of the processor with pin 1 of the socket (both are marked with a small gold triangle) and gently seat the processor into the socket (Figure 3-3).

5. Check to make sure the processor is flush to the socket and fully seated.

6. Lower the socket lever until it locks.

7. To install the heatsink, apply thermal grease to the top of the processor. (If reinstalling a heatsink, first clean off the old thermal grease with a clean, lint-free cloth.)

8. Place the heatsink on the processor then tighten one screw until snug, then the other screw.

9. When both screws are snug, tighten them down to secure the heatsink to the mainboard.

NOTE: Do not overtighten the screws as this may damage the processor or the heatsink.

10. Replace the cover on the blade unit and finish by installing the unit back into the blade enclosure.

Figure 3-3. Installing a G34 Processor in a Socket

Socket Lever

Gold Triangle

CPU Cover Plate
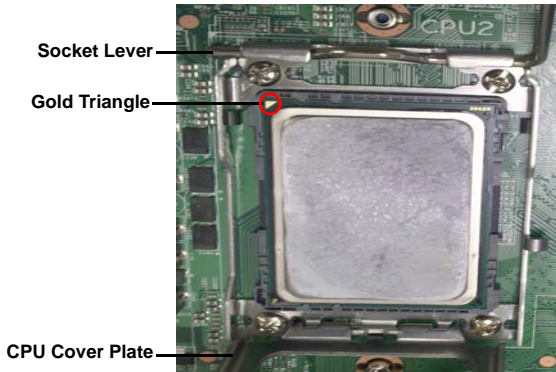
3-4   Onboard Battery Installation

A battery is included on the mainboard to supply certain volatile memory components with power when power has been removed from the blade module. If this battery dies, it must be replaced with an equivalent CR2032 Lithium 3V battery. Dispose of used batteries according to the manufacturer's instructions. See Figure 3-4 for a diagram of installing a new onboard battery.

WARNING: There is a danger of explosion if the onboard battery is installed upside down, which reverses its polarities.

Figure 3-4. Installing the Onboard Battery

Lithium Battery

Battery Holder
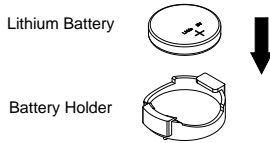
3-5   Memory Installation

The mainboard of each blade unit must be populated with DIMMs (Dual In-line Memory Modules) to provide system memory. **The DIMMs should all be of the same size and speed and from the same manufacturer to avoid compatibility issues.** See details below on supported memory and our web site (www.supermicro.com/products/superblade for recommended memory.

Populating Memory Slots

The mainboard of a SBA-7222G-T2 blade module has 8 memory slots per node. Both interleaved and non-interleaved memory are supported, so you may populate any number of DIMM slots.

Populating slots at the same time with memory modules of the same size and of the same type will result in three-channel, interleaved memory, which is faster than single-channel, non-interleaved memory. See Table 3-1 and Figure 3-5 for details.

For an interleaved configuration, memory modules of the same size and speed must be installed. You should not mix DIMMs of different sizes and speeds.

Table 3-1. Populating Memory Slots per Node for Interleaved Operation

Number of DIMMs	CPU	Channel 1	Channel 2	Channel3	Channel4
4 DIMMs	CPU1	P1-DIMM1	P1-DIMM2	---	---
	CPU2	P2-DIMM1	P2-DIMM2	---	---
8 DIMMs	CPU1	P1-DIMM1	P1-DIMM2	P1-DIMM3	P1-DIMM4
	CPU2	P2-DIMM1	P2-DIMM2	P2-DIMM3	P2-DIMM4

NOTE: The DIMM slot number specified in Table 3-1 equals the DIMM slot to be populated. A "---" indicates that the DIMM slot should be left unpopulated. DIMMs for one board are P1/P2 and P3/P4 for the other board.

NOTE: Though multiple DIMM memory module types and speeds may be supported, you need to use DIMM memory modules of the same speed and type.

Figure 3-5. 8-Slot DIMM Numbering for Two Node Blade Modules
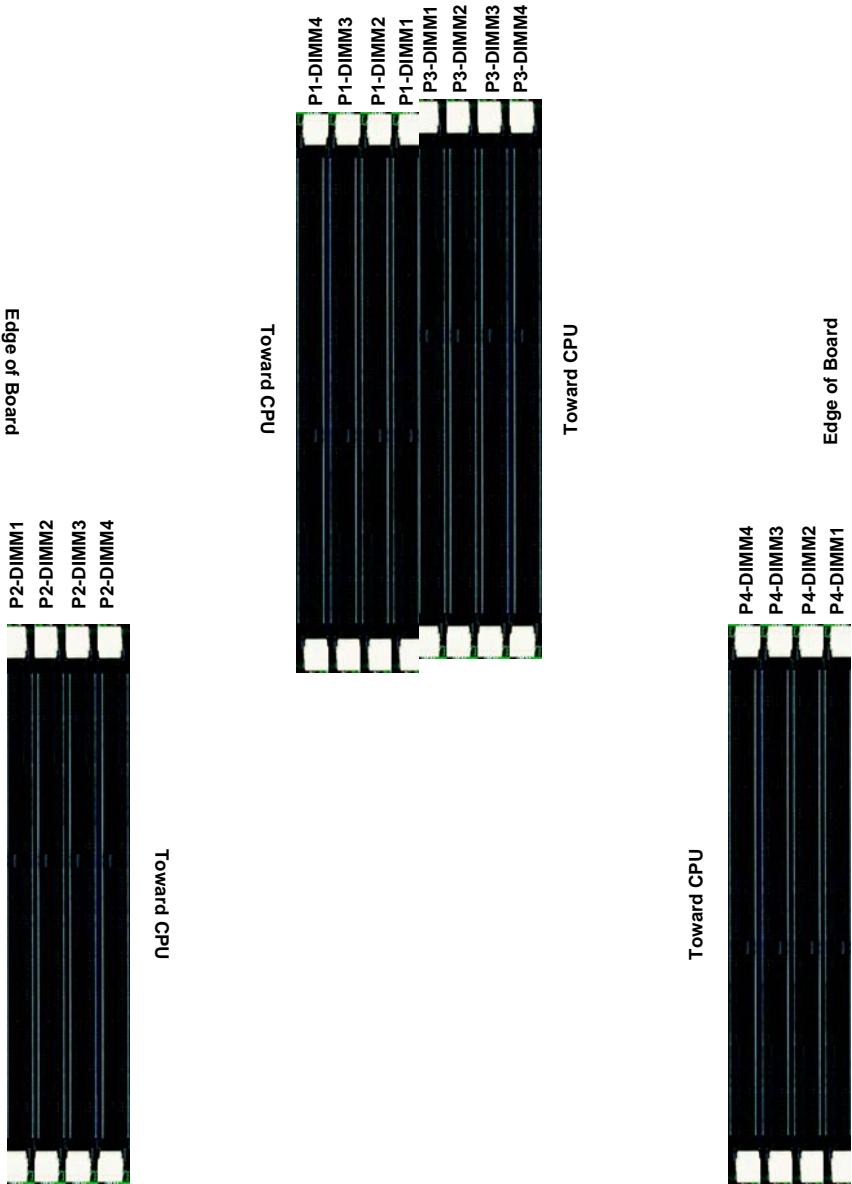
DIMM Installation

⚠️ **WARNING:** Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Installing DIMM Memory Modules

1. Power down the blade module (see "Powering Down a Blade Unit" on page 3-1).

2. Remove the blade from the enclosure and the cover from the blade (see "Removing/Replacing the Blade Cover" on page 3-2).

3. Insert each DIMM vertically into its slot. Pay attention to the notch along the bottom of the module to prevent inserting the DIMM incorrectly (see Figure 3-6).

Figure 3-6. Installing a DIMM into a Memory Slot

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notch.
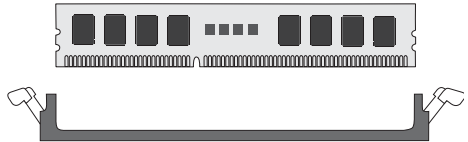
To Remove: Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

4. Gently press down on the DIMM until it snaps into place in the slot. Repeat for all modules (see Table 3-1 for installing DIMMs into the slots in the correct order).

5. Replace the air shroud and the blade cover and install the blade module back into the enclosure.

6. Power up the blade unit (see "Powering Up a Blade Unit" on page 3-1).

3-6   Hard Disk Drive Installation

Hard disk drives are installed in "carriers" which are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. A blade module needs a hard disk drive with an operating system installed to operate.

WARNING: To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.

Removing a Hard Drive Carrier

To remove a hard drive carrier, do the following:

Removing a Hard Drive Carrier

1. Locate the colored "Open" button at the bottom of the drive carrier and press it with your thumb. This action releases the drive carrier from the drive bay.

2. Pull the release handle out about 45-degrees, then use it to pull the drive carrier out.

Installing a Hard Drive

To Install a hard drive, use the following procedure:

Installing a Hard Drive

1. Remove a blank drive carrier from the blade (see removal procedure above).

2. Insert a 2.5" drive into the carrier with the PCB side facing down and the connector end toward the rear of the carrier.

3. Align the drive in the carrier so that the screw holes of both line up. Note that there are holes in the carrier marked "SATA" to aid in correct installation.

4. Secure the drive to the carrier with four screws as shown in Figure 3-7: "Installing a Hard Drive in a Carrier" on page 3-10.

5. Insert the drive carrier into its slot keeping the Open button at the bottom. When the carrier reaches the rear of the bay the release handle will retract.

6. Push the handle in until you hear the carrier click into its locked position.

Figure 3-7. Installing a Hard Drive in a Carrier
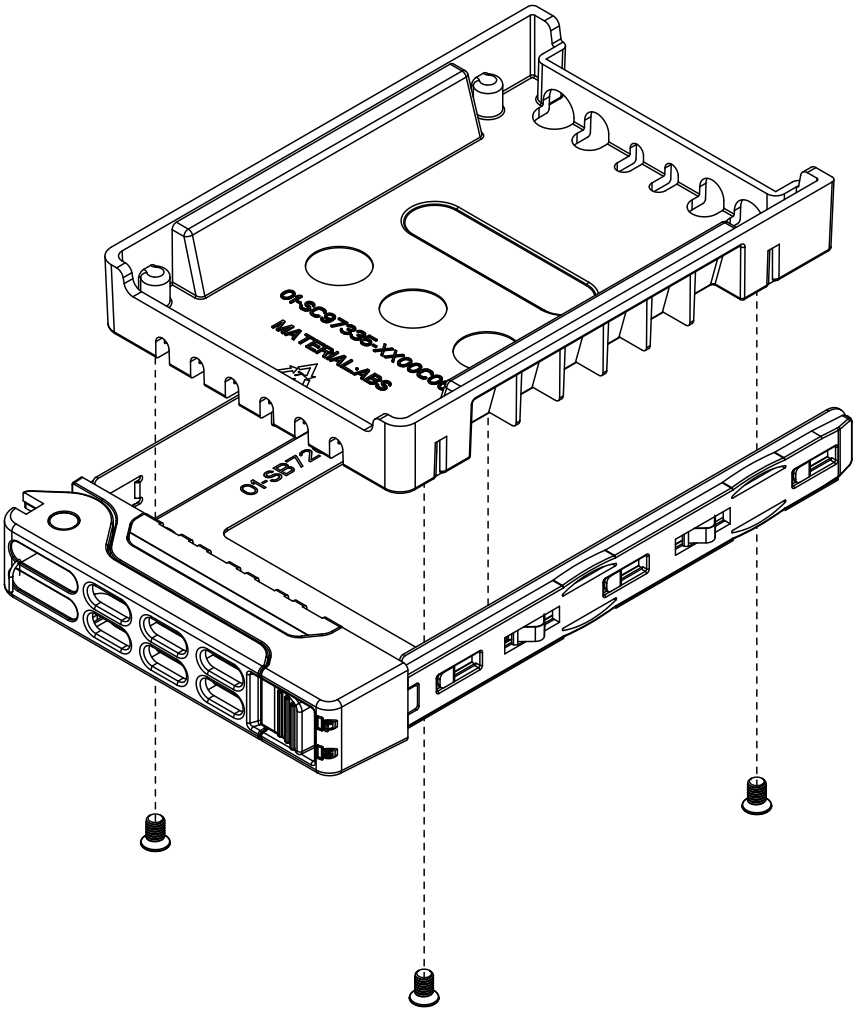
3-7   Installing the Operating System

An operating system (OS) must be installed on each blade module. Blades with Microsoft Windows OS and blades with Linux OS can both occupy and operate within the same blade enclosure. Refer to the SuperMicro web site for a complete list of supported operating systems.

There are several methods of installing an OS to the blade modules.

Installing with an External USB CD-ROM Drive

The most common method of installing the OS is with an external USB CD-ROM drive. Take the following steps to install the OS to a blade module:

WARNING: Installing the OS from an external CD-ROM drive may take several hours to complete.

1. Connect an SUV cable (Serial port/USB port/Video port cable) to the KVM connector on the front of the blade module. You will then need to attach a USB hub to the USB port on this cable to provide multiple USB ports.

2. Connect the external CD-ROM drive, a USB keyboard and a mouse to the USB hub. You will also need to connect a monitor to the video connector on the SUV cable. Turn on the blade module.

3. Insert the CD containing the OS into the CD-ROM drive.

4. Follow the prompts to begin the installation.

Installing via PXE Boot

PXE (Preboot Execution Environment) is used to boot a computer over a network. To install the OS via PXE, the following conditions must be met:

1. The PXE BOOT option in BIOS must be enabled.

2. A PXE server has been configured (this can be another blade in the system).

3. The PXE server must be connected over a network to the blade to be booted.

4. The blade has only non-partitioned/unformatted hard drives installed and no bootable devices attached to it.

Once these conditions are met, make sure the PXE server is running. Then turn on the blade on which you wish to boot and/or install the OS. The BIOS in the blade will look at all bootable devices and finding none will connect to the PXE server to begin the boot/install.

Installing via Virtual Media (Drive Redirection)

You can install the OS via Virtual Media through either the *IPMIview* (Java based client utility), *SuperBladeTool* or the *Web-based Management Utility*. With this method, the OS is installed from an ISO image that resides on another system/blade.

Refer to the manuals on your SuperBlade CD-ROM for further details on the Virtual Media (CD-ROM or Drive Redirection) sections of these two utility programs.

Linux Installation with Two Hard Drives

When installing Linux with 2 HDD on the SBA-7222G-T2 (one per node) you may encounter a situation where one drive is recognized as HDA and the other drive is recognized as SDA. This is normal since in this case the connection for SATA HDDs is from two different controllers.

So under Native IDE mode (which is the default), your Linux OS will see one drive as *HDA* and the other as *SDA*. If the SATA controller mode operation is changed to **AMD_AHCI** in the BIOS, then the HDDs will appear as SDA *and* SDB.

3-8 Management Software

System management may be performed with either of three software packages: *IPMIview*, *SuperBladeTool* or a *Web-based Management Utility*. These are designed to provide an administrator with a comprehensive set of functions and monitored data to keep tabs on the system and perform management activities.

Refer to the manuals on your SuperBlade CD-ROM for further details on the various functions provided by these management programs.

3-9 Configuring and Setting up RAID

Each blade module that supports two or more hard drives may be used to create a RAID array. The procedures for doing this vary depending upon the blade model chosen for your SuperBlade system.

See Chapter 5 for details on how to configure and set up RAID on your blade module.

Chapter 4
Blade Module Features

Figure 4-1. SBA-7222G-T2 Blade Unit Front View

This chapter describes the SBA-7222G-T2 blade unit. Installation and maintenance should be performed by experienced technicians only.

See Figure 4-1 for a front view of the blade unit and Table 4-1 for its features.

Table 4-1. SBA-7222G-T2 Blade Unit Features

Feature	Description
Processors	Each node supports two 1944-pin G34 sockets for up to two AMD Opteron 6100 series processors per node.
Memory	Supports up to 128 GB of ECC Registered DDR3-1333/1066/800 SDRAM DIMMs or 32 GB of ECC Unbuffered DDR3-1333/1066/800 SDRAM DIMMs in eight DIMM slots per node
Storage	One or two 2.5" hot-plug SATA or SSD hard disk drives per node
Ports	KVM port (1 per node)
Features	Onboard Matrox G200eW Graphics chip with 16 MB of SDRAM, IPMI 2.0, Plug and Play, APM 1.2, DMI 2.3, PCI 2.2, ACPI 1.0/2.0, SMBIOS 2.3, Real Time Clock
Power Consumption	Base Power Draw (~35W) / Power per CPU (85W/115W/137W/140W) / Power per DIMM (typically ~7W)

4-1   Control Panel

Each blade has a similar control panel (Figure 4-2) with power on/off button, a KVM connector, a KVM button and four LEDs on the top front of the unit. The numbers mentioned in Figure 4-2 are described in Table 4-2.

Figure 4-2. Blade Control Panel
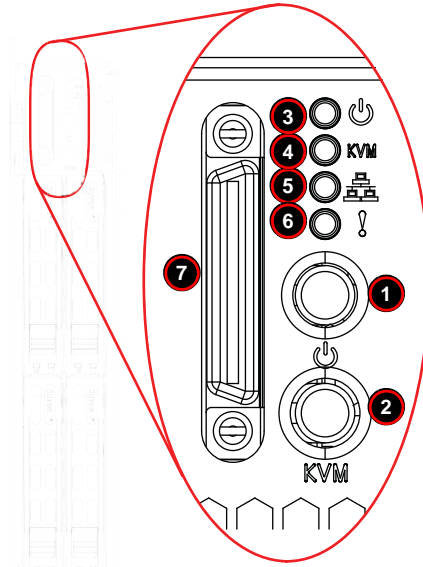
Table 4-2. Blade Control Panel

Item	Function	State	Description
1	Power Button	N/A	Turns blade module on and off
2	KVM Button	N/A	Initiates KVM function
3	Power LED	Green	Indicates power status "On"
		Orange	Indicates power status "Off" (with power cables plugged in)
4	KVM/UID LED	Blue	Indicates KVM being utilized on blade unit
		Flashing Blue	Indicates UID activated on blade module
5	Network/IB LED	Flashing Green	Indicates network activity over LAN
		Flashing Orange	Indicates network activity over InfiniBand module
6	System Fault LED	Red	Indicates a memory error, overheat, VGA error or any error that prevents booting
7	KVM Connector	N/A	Connector for SUV/KVM cable

Power Button

Each blade has its own power button so that individual blade units within the enclosure may be turned on or off independently of the others. Press the power button (#1) to turn on the blade server. The power LED (#3) will turn green. To turn off, press and hold the power button for >4 seconds (one second if between POST and boot-up) and the power LED will turn orange.

KVM Button

KVM stands for Keyboard/Video/Mouse. With KVM, a user can control multiple blades with a single keyboard/video/mouse setup. Connect your keyboard, mouse and monitor to the USB and VGA connectors on the CMM module, then push the KVM button on the control panel of the blade module you wish to access.

LED Indicators

Blade module LEDs are described below in Table 4-3.

Table 4-3. Blade Module LED Indicators

LED	State	Description
Power LED	Green	Power On
	Amber	Standby
	Red	Power Failure[a]
KVM/UID LED (Blue)	Steady On	Indicates that KVM has been initialized on this blade module
	Flashing	Serves as a UID indicator (the UID function is activated with a management program)
Network LED (Green)	Flashing	Flashes on and off to indicate traffic (Tx and Rx data) on the LAN connection to this blade module.
System Fault LED (Red)	Steady On	This LED illuminates red when a fatal error occurs. This may be the result of a memory error, a VGA error or any other fatal error that prevents the operating system from booting up.

a. In the event of a power failure, the N+1 Redundant Power Supply (if included in your system's configuration) shares the system load to provide uninterrupted operation. The failed power supply should be replaced with a new one as soon as possible.

KVM Connector

Alternatively, you may connect a KVM cable (CBL-0218L, with a keyboard/video/mouse attached) to the KVM connector (#7) of the blade you wish to access. To switch to another blade, disconnect the cable then reconnect it to the new blade.

See the *Web-based Management Utility User's Manual* on your SuperBlade system CD-ROM for further details on using the KVM function remotely.

4-2   Mainboard

The mainboard of the SBA-7222G-T2 blade unit is a proprietary design, which is based on the AMD SR5650 & SP5100 chipset. See Figure 4-4 for a block diagram of this chipset, Figure 4-3 for a view of the BHDGT Mainboard and Figure 4-5 for an exploded view diagram of the blade unit.

Figure 4-3. BHDGT Mainboard
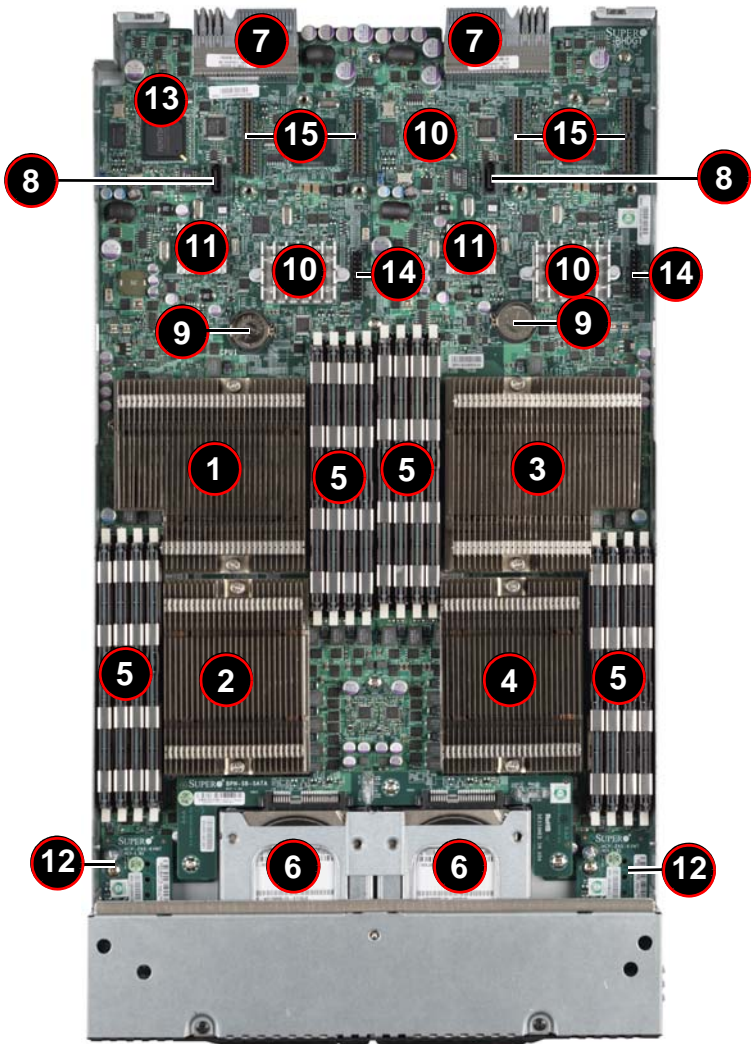
Table 4-4. BHDGT Mainboard Layout

Item	Description
1	CPU1 Socket
2	CPU2 Socket
3	CPU3 Socket
4	CPU4 Socket
5	DIMM Slots (see Figure 3-5: "8-Slot DIMM Numbering for Two Node Blade Modules" on page 3-7 for details)
6	Space for 2.5" SATA Hard Drive
7	Gbx Connector (for power and logic to backplane)
8	SATA Connector
9	Onboard Battery
10	AMD SR5650 chipset
11	SP5100 Chipset
12	KVM Module includes USB Type-A Connector (Not Shown)
13	NPCM450 BMC Controller with Embedded Matrox G200eW Graphics chip
14	TPM Connector
15	InfiniBand Daughter Card Connectors

Figure 4-4. BHDGT Block Diagram
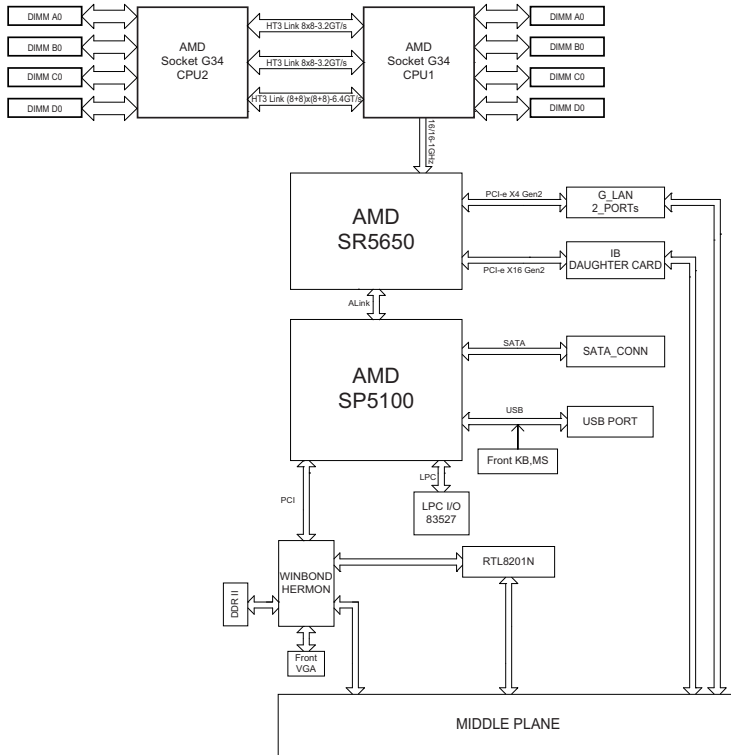
Jumpers

The jumpers present on the mainboard are used by the manufacturer only; there are no jumpers used to configure the operation of the mainboard.

CMOS Clear

JBT1 is used to clear CMOS and will also clear any passwords. JBT1 consists of two contact pads located near the BIOS chip (#10 in Figure 4-3).

Clearing CMOS

1. First power down the blade and remove it from the enclosure.

2. Remove the blade cover to access the mainboard (see "Removing/Replacing the Blade Cover" on page 3-2 for further details). Short the CMOS pads with a metal object such as a small screwdriver.

3. Replace the cover, install the blade back into the enclosure and power it on.

4-3   Blade Unit Components

Figure 4-5. Exploded View of SBA-7222G-T2 Blade Module
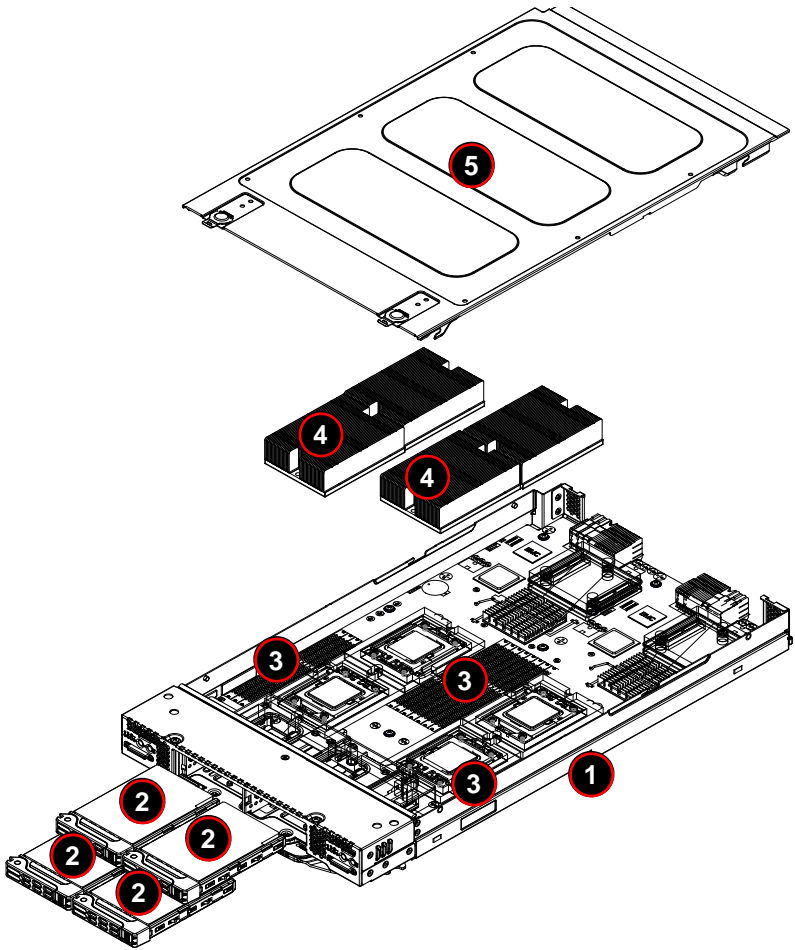
Table 4-5. Main Components of SBA-7222G-T2 Blade Unit

Item	Description
1	Blade Unit/Module
2	SATA Hard Drives (2 per blade node, 4 total)
3	DIMMs (system memory, 8 per node, 16 total)
4	CPU Heatsinks (2 per node, 4 total)
5	Top Cover

Memory Support

Each node of the SBA-7222G-T2 blade module each supports up to 128 GB of ECC Registered DDR3-1333/1066/800 SDRAM or 32 GB of ECC Unbuffered DDR3-1333/1066/800 SDRAM in eight DIMM sockets. See Section 3-5 for further details on mainboard memory installation.

Hard Disk Drives

The SBA-7222G-T2 blade unit accommodates up to four 2.5" SATA hard disk drives, two per node, which are mounted in drive "carriers". The drives are hot-swappable and can be removed or replaced without powering down the blade unit they reside in. The four drives can be used to set up a RAID array (SATA RAID 0 or 1 only) or JBOD. These drives use a blue color for the Blade HDD active LED.

WARNING: Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro WEB SITE at http://www.supermicro.com/products/nfo/files/storage/SAS-1-CompList-110909.pdf.

WARNING: To maintain proper airflow, both hard drive bays must have drive carriers inserted during operation whether or not a drive is installed in the carrier.

Chapter 5
RAID Setup Procedure

Each SBA-7222G-T2 blade module supports four hard drives, two per node, which may be used to create a RAID array.

Important Notes

Please read the following notes and warnings before setting up your RAID array.

NOTE: Before adding a new drive to an array, back up any data contained on the new drive. Otherwise, all data will be lost.

NOTE: If you stop the BUILD or CLEAR process on a RAID 1 from the *ACU*, you can restart it by pressing <CTRL> + <R>.

NOTE: A RAID 1 created using the QUICK INIT option may return some data miscompares if you later run a consistency check. This is normal and is not a cause for concern.

NOTE: The *ACU* allows you to use drives of different sizes in an array. However, during a build operation, only the smaller drive can be selected as the source or first drive.

NOTE: When migrating from single volume to RAID 0, migrating from a larger drive to a smaller drive is allowed. However, the destination drive must be at least half the capacity of the source drive.

WARNING: Adaptec does not recommend that you migrate or build an array on Windows dynamic disks (volumes), as it will result in data loss.

WARNING: Do not interrupt the creation of a RAID 0 using the MIGRATE option. If you do, you will not be able to restart or to recover the data that was on the source drive.

5-1   BIOS Setup

Use the BIOS setup to configure to set RAID options. The BIOS setup procedure is shown below.

See Chapter 6 for information on using your system's BIOS setup.

Setting up the BIOS for RAID

1. In the ADVANCED SETTINGS screen of the BIOS Setup, select the IDE CONFIGURATION sub-menu and press ENTER.

2. In the IDE Configuration screen that appears (Figure 5-1), select the OnChip SATA Type option and select RAID.

Figure 5-1. IDE Configuration Screen – Configure RAID Drives
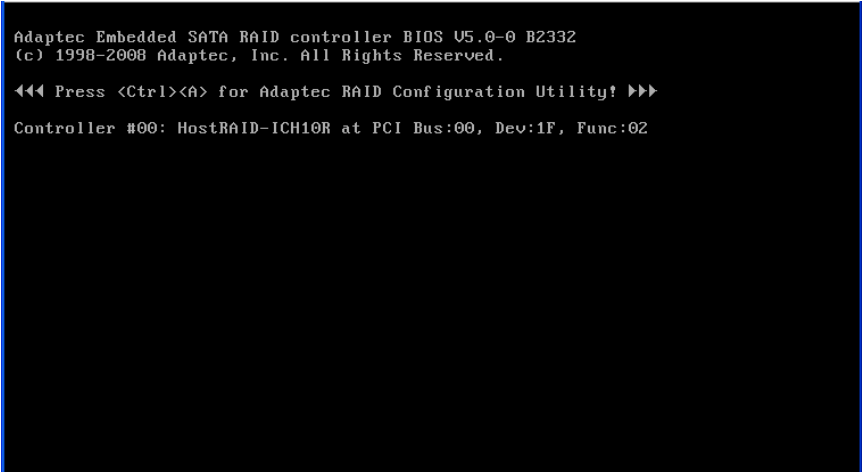
3. Press the Esc key once to exit the IDE CONFIGURATION screen and go to the EXIT menu in the BIOS setup. From the Exit menu, select SAVE CHANGES AND EXIT to confirm your RAID configuration changes and exit the BIOS Setup (Figure 5-2).

Figure 5-2. Exit BIOS Setup
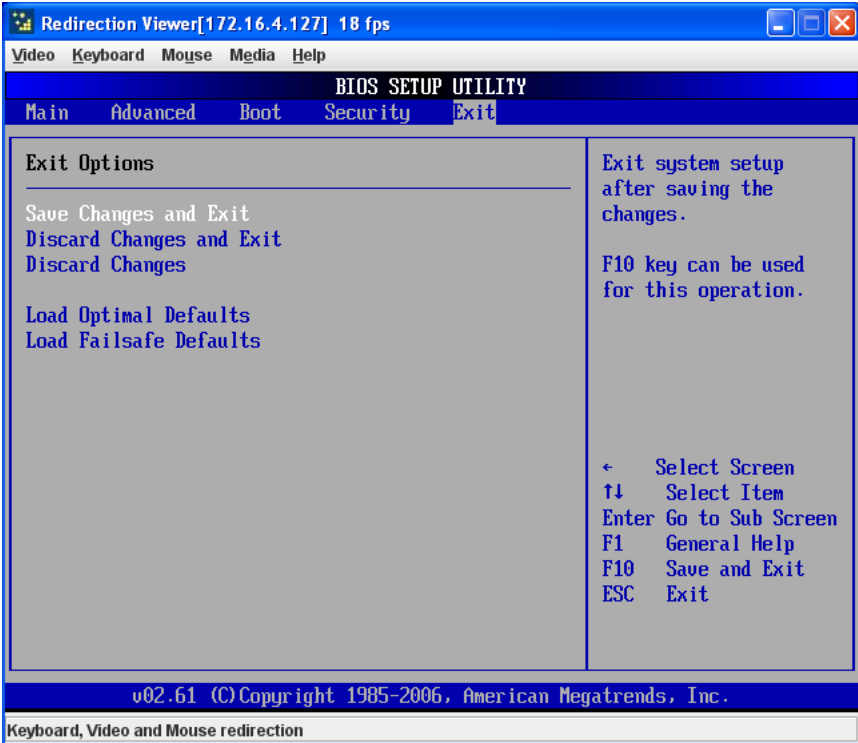
4. Your system will reboot. When the reboot displays the screen message in Figure 5-3 press CTRL-A to bring up the RAID Configuration Utility.

Figure 5-3. Screen Message

Chapter 6
BIOS

6-1   Introduction

This document describes the AMI® BIOS Setup utility for the SBA-7222G-T2 Blade Module. The AMI ROM BIOS is stored in a flash chip and can be easily upgraded using a floppy disk-based program.

Running Setup

> **NOTE:** Default settings are in **bold** text unless otherwise noted.

The BIOS setup options described in this section are selected by choosing the appropriate text from the MAIN BIOS SETUP screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options.

When you first power on the computer, the BIOS is immediately activated. While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <DELETE> immediately after turning the system on, or

2. When the message **Press the <Delete> key to enter Setup** appears briefly at the bottom of the screen during the POST, press the <DELETE> key to activate the main SETUP menu.

6-2   Main BIOS Setup Menu

The MAIN MENU screen has two main frames. The left frame displays all the options that can be configured. "Grayed-out" options cannot be configured. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

> **NOTE:** The BIOS has default text messages built in. SuperMicro retains the option to include, omit, or change any of these text messages.

Settings printed in **Bold** are the default values. Use the UP/DOWN arrow keys to move among the different settings in each menu. Use the LEFT/RIGHT arrow keys to change the options for each setting.

Items that use sub-menus are indicated with the ▶ icon. With the item highlighted, press the <ENTER> key to access the submenu.

The BIOS setup utility uses a key-based navigation system called hot keys. Most of these hot keys (<F1>, <F10>, <ENTER>, <ESC>, <ARROW> keys, and so on) can be used at any time during the setup navigation process. Press the <ESC> key to exit the CMOS SETUP menu.

When you first enter the AMI BIOS Setup utility, you will see the MAIN MENU screen. You can always return to the MAIN MENU by selecting the **Main** tab on the top of the screen with the arrow keys. The MAIN MENU screen provides you with a system overview, which includes the version, built date and ID of the AMIBIOS, the type, speed and number of the processors in the system and the amount of memory installed in the system.

System Time/System Date

You can edit the SYSTEM TIME/SYSTEM DATE field to change the system time and date. Highlight SYSTEM TIME or SYSTEM DATE using the <ARROW> keys. Enter new values through the keyboard. Press the <TAB> key or the <ARROW> keys to move between fields.

The date must be entered in **DAY/MM/DD/YYYY** format. The time is entered in **HH:MM:SS** format. Please note that time is in a 24-hour format. For example, 5:30 A.M. appears as 05:30:00 and 5:30 P.M. as 17:30:00.

6-3 Advanced Settings Menu

Choose **Advanced** from the BIOS Setup Utility main menu with the arrow keys. The items with a triangle beside them have sub menus that can be accessed by highlighting the item and pressing <ENTER>. Below is a list of all submenus in the ADVANCED SETTINGS menu:

- Boot Feature
- Processor & Clock Options
- Advanced Chipset Control
- IDE Configuration
- PCI/PnP Configuration
- Super IO Device Configuration
- Remote Access Configuration
- Hardware Health Configuration
- ACPI Configuration
- IPMI Configuration
- Event Log Configuration

Boot Feature

The menu options in the BOOT FEATURE submenu and their descriptions are shown in Table 6-1.

Table 6-1. Boot Feature Submenu

Menu Option	Description
Quick Boot	This option allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system. Options include **Enabled** or Disabled.
Quiet Boot	When this option is **Enabled**, it displays the OEM Logo instead of POST messages. When Disabled, it displays normal POST messages.
AddOn ROM Display Mode	This option sets the display mode for Option ROM. It can be set as either **Force BIOS** or Keep Current.
Bootup Num-Lock	This option selects the power-on state for the Numlock. It can be set to either **On** or Off.
PS/2 Mouse Support	Use this option to select support for the PS/2 mouse. Options include **Auto**, Enabled or Disabled.
Wait for 'F1' If Error	This option sets the system to wait for the F1 key to be pressed if an error occurs. Options include **Enabled** or Disabled.
Hit 'DEL' Message Display	This option displays the message "Press DEL to run Setup in Post" when enabled. Options include **Enabled** or Disabled.
Watch Dog Function	This option allows the system to restart when it is not active more than 5 minutes. Options include Enabled or **Disabled**.
Power Button Function	This sets the power button function to either **Instant Off** or 4 Second Override.
Restore on AC Power Loss	This option allows you to specify the action the system will take when there is an AC power loss. Options include **Power-Off**, Power-On or Last State.
Interrupt 19 Capture	When enabled, this option allows the system's option ROMs to trap interrupt 19.

Processor & Clock Options

The menu options in the PROCESSOR & CLOCK OPTIONS submenu and their descriptions are shown in Table 6-2.

Table 6-2. Processor & Clock Options Submenu

Menu Option	Description
CPU Settings (Static)	This menu displays static information for each CPU in the system. It includes CPU Manufacturer, Chip information, Revision, Speed, Cache L1, Cache L2, Cache L3, NB Clk, Able to change frequency and uCode Patch Level.
Gart Error Reporting	This option should remain disabled for normal operation. The driver developer may enable it for testing purpose. Options include **Disabled** and Enabled.
Microcode Update	This option allows you to **enable** or disable microcode updating for the system.
Secure Virtual Machine Mode	This option allows you to **enable** or disable Secure Virtual Machine Mode (SVM)
PowerNow	This option allows you to **enable** or disable the generation of ACPI _PPC, _PPS, and _PCT objects.
PowerCap	This option can decide the highest performance P-state in the OS. Options include **P-state 0**, P-state 1, P-state 2, P-state 3 and P-state 4.
ACPI SRAT Table	This option **enables** or disables the building of the ACPI SRAT Table.
CPU Down Core	This option allows you to specify the Down Core support for the CPU. Options include **Disabled**, 2 cores, 4 cores, 6 cores, 8 cores and 10 cores.
C1E Support	This option allows you to disable or **enable** C1E support in your system.

Advanced Chipset Control

The menu options in the Advanced Chipset Control submenu and their descriptions are shown in Table 6-3.

Table 6-3. Advanced Chipset Control Submenu

Menu Option	Description
Chipset Version Information	This static information is provided for the chipset CIMx version.
▶ NorthBridge Configuration	This submenu contains the following submenus and options for NorthBridge Configuration.
▶ Memory Configuration	This submenu contains the following options for Memory Configuration.
Bank Interleaving	This option enables Bank Memory Interleaving. Options include **Auto** and Disabled.
Node Interleaving	This option enables Node Memory Interleaving. Options include Auto and **Disabled**.
Channel Interleaving	This option enables Channel Interleaving. Options include **Auto** and Disabled.

Table 6-3. Advanced Chipset Control Submenu

Menu Option	Description
CS Sparing Enable	This option reserves a spare memory rank in each node. Options include Enabled and **Disabled**.
Bank Swizzle Mode	This option **enables** or disables bank swizzle mode.
▶ ECC Configuration	This submenu contains the following options for ECC Configuration.
ECC Mode	This option sets the level of ECC protection. Setting the option to 'Super' ECC mode dynamically sets the DRAM scrub rate so all of memory is scrubbed in 8 hours. If you set this option to 'User' then you may further set the DRAM ECC Enable option manually. Options include Disabled, **Basic**, Good, Super, Max and User.
DRAM ECC Enable	This option is only available for manual setting if the ECC Mode option above is set to 'User". This option allows hardware to report and correct memory errors automatically, maintaining system integrity. Options include **Enabled** or Disabled.
▶ DRAM Timing Configuration	This submenu contains the following options for DRAM Timing Configuration.
DRAM Timing Configuration	This option allows you to set the DRAM Timing configuration as **Auto** or Manual.
Memory Timing Parameters	This option selects which node's timing parameters to display. Options include **CPU Node 0** or CPU Node 3.
Memory Information	Static memory information is also displayed in this submenu that includes Memory CLK, CAS Latency (Tcl), RAS/CAS Delay (Trcd), Row Precharge Time (Trp), Min Active RAS (Tras), RAS/RAS Delay (Trrd), Row Cycle (Trc), Read to Precharge (Trtp) and Write Recover Time (Twr).
IOMMU	This option enables or **disables** the IOMMU setting.
OHCI HC and EHCI HC Bus Settings	These settings allow to **enable** or disable the various OHCI or EHCI HC bus settings.
USB 2.0 Controller Mode	This option allows you to configure the USB 2.0 controller in HiSpeed (480Mbps) or Full Speed (12Mbps) mode. Options include **Enabled** or Disabled.
Legacy USB Support	This option enables support for legacy USB devices. Auto disables legacy support if no USB devices are connected. Options include **Auto**, Enabled or Disabled.

IDE Configuration

The menu options in the IDE Configuraтіон submenu and their descriptions are shown in Table 6-4

Table 6-4. IDE Configuration Submenu

Menu Option	Description
OnBoard PCI IDE Controller	This option **enables** or disables the onboard PCI IDE controller.
OnChip SATA Channel	This option **enables** or disables the on-chip SATA channel.
OnChip SATA Type	This option specifies the on-chip SATA type. Options include **Native IDE**, RAID, AMD_AHCI and Legacy IDE.
SATA IDE Combined Mode	This option **enables** or disables SATA IDE Combined Mode in your system.
PATA Channel Config	This option specifies the PATA Channel configuration. You may specify either **SATA as Primary** or SATA as Secondary as options.
▶Primary/Secondary/ Third/Fourth Master/ Slave submenus	These submenus are specifying options for each installed Master/Slave drive in the system. Their common options are described below.
Device Information	Static device information is shown at the top of this submenu for Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA and S.M.A.R.T information.
Type	Use thsi option to select the type of device connected to the system. Options include Not Installed, **Auto**, CD/DVD and ARMD.
LBA/Large Mode	LBA (Logical Block Addressing) is a method of addressing data on a disk drive. The options are Disabled and **Auto**.
Block (Multi-Sector Transfer)	Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt. Select "Disabled" to allow the data to be transferred from and to the device one sector at a time. Select "Auto" to allows the data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.
PIO Mode	PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4. Select Auto to allow BIOS to auto detect the PIO mode. Use this value if the IDE disk drive support cannot be determined. Select 0 to allow BIOS to use PIO mode 0, which has a data transfer rate of 3.3 MBs. Select 1 to allow BIOS to use PIO mode 1, which has a data transfer rate of 5.2 MBs. Select 2 to allow BIOS to use PIO mode 2, which has a data transfer rate of 8.3 MBs. Select 3 to allow BIOS to use PIO mode 3, which has a data transfer rate of 11.1 MBs. Select 4 to allow BIOS to use PIO mode 4, which has a data transfer rate of 16.6 MBs. This setting generally works with all hard disk drives manufactured after 1999. For other disk drives, such as IDE CD-ROM drives, check the specifications of the drive.

Table 6-4. IDE Configuration Submenu (Continued)

Menu Option	Description
DMA Mode	Selects the DMA Mode. Options are **Auto**, SWDMA0, SWDMA1, SWDMA2, MWDMA0. MDWDMA1, MWDMA2, UDMA0. UDMA1, UDMA2, UDMA3, UDMA4, UDMA5. and UDMA6. (SWDMA=Single Word DMA, MWDMA=Multi Word DMA, UDMA=UltraDMA.)
S.M.A.R.T	Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select "Auto" to allow BIOS to auto detect hard disk drive support. Select "Disabled" to prevent AMI BIOS from using the S.M.A.R.T. Select "Enabled" to allow AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.
32Bit Data Transfer	Select "Enabled" to activate the function of 32-Bit data transfer. Select "Disabled" to deactivate the function. The options are **Enabled** and Disabled.
IDE Detect Time Out	Use the +/- keys to adjust and select the time out for detecting ATA/ATAPI devices. The default value is **35**.

PCI/PnP Configuration

The menu options in the PCI/PnP Configuration submenu and their descriptions are shown in Table 6-5.

Table 6-5. PCI/PnP Configuration Submenu

Menu Option	Description
Clear NVRAM	Select Yes to clear NVRAM during boot-up. The options are Yes and **No**.
Plug & Play OS	Select Yes to allow the OS to configure Plug & Play devices. **NOTE:** Selecting Yes is not required for system boot if your system has an OS that supports Plug & Play. Select **No** to allow AMIBIOS to configure all devices in the system.
PCI Latency Timer	This option sets the latency of all PCI devices on the PCI bus. Select a value to set the PCI latency in PCI clock cycles. Options are 32, **64**, 96, 128, 160, 192, 224 and 248.
PCI IDE BusMaster	When enabled, this allows BIOS to use PCI busmastering for reading/writing to IDE drives. Options include **Enabled** and Disabled.
ROM Scan Ordering	This setting determines which kind of option ROM activates prior to another. Options include **Onboard First** and Addon First.
PCIE X16 Slot 1	This option **enables** or disables slot OPROM.
Onboard LAN Option ROM Select	This setting allows you to select the onboard LAN option ROM for iSCSI or **PXE**. Note: You must enable ONLY LAN1 when the iSCSI support option is specified.
Load Onboard LAN 1 Option ROM	This option allows you to enable or **disable** the onboard LAN 1 option ROM.
Load Onboard LAN 2 Option ROM	This option allows you to enable or **disable** the onboard LAN 2 option ROM.
Primary Video Controller	This option specifies the primary video controller for **Onboard VGA** or Other.

Super IO Device Configuration

The menu options in the SUPER IO CONFIGURATION submenu and their descriptions are shown in Table 6-6.

Table 6-6. Super IO Configuration Submenu

Menu Option	Description
Serial Port1 Address	This option specifies the base I/O port address and Interrupt Request address of serial port 1. The options are DISABLED, **3F8/IRQ4**, 3E8/IRQ4 and 2E8/IRQ3. • Select DISABLED to prevent the serial port from accessing any system resources. When this option is set to DISABLED, the serial port physically becomes unavailable. • Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address.
Serial Port2 Address	This option specifies the base I/O port address and Interrupt Request address of serial port 2. The options are DISABLED, **2F8/IRQ3**, 3E8/IRQ4 and 2E8/IRQ3. Select DISABLED to prevent the serial port from accessing any system resources. When this option is set to DISABLED, the serial port physically becomes unavailable. Select 2F8/IRQ3 to allow the serial port to use 2F8 as its I/O port address and IRQ 3 for the interrupt address.
Serial Port 2 Attribute	This option can set COM 2 as a normal serial port or virtual COM for SOL. Options are COM or **SOL**.

Remote Access Configuration

The menu options in the REMOTE ACCESS CONFIGURATION submenu and their descriptions are shown in Table 6-7.

Table 6-7. Remote Access Configuration Submenu

Menu Option	Description
Remote Access	Allows you to **Enable** or Disable remote access. If enabled, the settings below will appear.
Serial Port Number	Selects the serial port to use for console redirection. Options are COM1 and **COM2***
Serial Port Mode	Selects the serial port settings to use. Options are **(115200 8, n, 1)**, (57600 8, N, 1), (38400 8, N, 1), (19200 8, N, 1) AND (09600 8, N, 1).
Flow Control	Selects the flow control to be used for console redirection. Options are **None,** HARDWARE and SOFTWARE.
Redirection After BIOS POST	Options are DISABLE (no redirection after BIOS POST), BOOT LOADER (redirection during POST and during boot loader) and **Always** (redirection always active). Note that some OS's may not work with this set to Always.
Terminal Type	Selects the type of the target terminal: **ANSI**, VT100 and VT-UTF8.

Table 6-7. Remote Access Configuration Submenu (Continued)

Menu Option	Description
VT-UTF8 Combo Key Support	Allows you to **Enable** or DISABLE VT-UTF8 combination key support for ANSI/VT100 terminals.
Sredir Memory Display Delay	Use this setting to set the delay in seconds to display memory information. Options are **No Delay**, 1 SEC, 2 SECS and 4 SECS.

Hardware Health Configuration

The menu options in the HARDWARE HEALTH CONFIGURATION submenu and their descriptions are shown in Table 6-8.

Table 6-8. Hardware Health Configuration Submenu

Menu Option	Description
CPU Overheat Alarm	This option lets you specify the CPU Overheat Alarm to either The Early Alarm or **The Default Alarm**.
CPU Information	Static CPU health information is shown in this submenu. The following information is shown: CPU 1 Temperature, CPU Temperature, NB Temperature, System Temperature, CPU1 Vcore, CPU2 Vcore, CPU1 Mem VTT, CPU2 Mem VTT, CPU1 Mem, CPU2 Mem, 1.1V, 5V, 5VSB, +12V, 3.3Vcc and 3.3VSB.

ACPI Configuration

The menu options in the ACPI CONFIGURATION submenu and their descriptions are shown in Table 6-9.

Table 6-9. ACPI Configuration Submenu

Menu Option	Description
ACPI Aware O/S	This option enables or disables ACPI support for the operating system. Options are **Yes** or No.
ACPI APIC support	Use this setting to include the ACPI APIC table pointer to the RSDT pointer list. Options are **Enabled** and Disabled.
Headless Mode	This setting Enables or **Disables** the Headless operation mode through ACPI.
ACPI Version Features	This option enables RSDP pointers to the 64-bit Fixed System Description Table and specifies the ACPI Version. Options are ACPI v1.0, **ACPI v2.0** and ACPI v3.0.

IPMI Configuration

The menu options in the IPMI CONFIGURATION submenu and their descriptions are shown in Table 6-10.

Table 6-10. IPMI Configuration Submenu

Menu Option	Description
IPMI Information Display (Static)	This static display provides information for the Status of BMC and IPMI Firmware Revision.
▶ View BMC System Event Log	This sub-menu allows you to view all events in the BMC Event Log. It will take a maximum of 15 seconds to read all BMC SEL records.
SEL Entry Number	Use the +/- keys to traverse the BMC Event Log.
Clear BMC System Event Log	Use this option to clear all events in the BMC System Event Log.
▶ Set LAN Configuration	This is the input for the SET LAN Configuration command. See IPMI 1.5 Specification Table 19.1 for details. **NOTE:** Each question in this sub-menu may take a considerable amount of time to complete.
▶ IP Address	Use this sub-menu for IP Address configuration.
IP Address Source	This setting allows you to specify either a **DHCP** or Static IP Address Soruce. If you select Static for the IP Address Source, then the IP Address setting becomes active.
IP Address	This setting allows you to set the IP Address for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current IP Address is statically displayed below.
▶ MAC Address	Use this sub-menu for MAC Address configuration.
MAC Address	This setting allows you to set the IP Address for your LAN Configuration in hex format of XX.XX.XX.XX.XX.XX. The current MAC Address is statically displayed below.
▶ Subnet Mask	Use this sub-menu for Subnet Mask configuration.
Subnet Mask	This setting allows you to set the Subnet Mask for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current Subnet Maks is statically displayed below.
▶ Gateway Address	Use this sub-menu for Gateway Address configuration.
Gateway Address	This setting allows you to set the Gateway Address for your LAN Configuration in decimal format of XXX.XXX.XXX.XXX and with values less than 256. The current Gateway Address is statically displayed below.
BMC Watch Dog Timer Action	This option allows the BMC to reset or power down the system if the operating system crashes or hangs. Options include **Disabled**, Reset System, Power Down or Power Cycle.

Event Log Configuration

The menu options in the EVENT LOG CONFIGURATION submenu and their descriptions are shown in Table 6-11.

Table 6-11. Event Log Configuration Submenu

Menu Option	Description
View Event Log	Highlight this item and press <ENTER> to view the contents of the event log.
Mark All Events as Read	Highlight this item and press <ENTER> to mark all events as read.
Clear Event Log	Select Yes and press <ENTER> to clear all event logs. The options are YES and NO to verify.
SR56x0 (RD890S) PCIE Error Log	This option allows you to enable or disable the SR56x0 (RD890S) PCIE error log. Options include Yes or **No**.

6-4   Security Menu

The menu options for the SECURITY menu are shown in Table 6-12.

The AMI BIOS provides a **Supervisor** and a **User** password. If you use both passwords, the Supervisor password must be set first.

Table 6-12. Security Menu

Menu Option	Description
Change Supervisor Password	Select this option and press <ENTER> to access the sub menu, and then type in the password.
Change User Password	Select this option and press <ENTER> to access the sub menu, and then type in the password.
Boot Sector Virus Protection	This option is near the bottom of the SECURITY SETUP screen. The options are ENABLED and **Disabled**. • Select DISABLED to deactivate the Boot Sector Virus Protection. • Select ENABLED to enable boot sector protection. When ENABLED, the AMI BIOS displays a warning when any program (or virus) issues a *Disk Format* command or attempts to write to the boot sector of the hard disk drive.

6-5   Boot Menu

The menu options for the BOOT menu are shown in Table 6-13.

Table 6-13. Boot Menu

Menu Option	Description
▶ Boot Device Priority	Use this sub-menu to specify the boot device priority sequence for devices installed in your system. .
1st ~ Boot Devices	These settings specify the boot sequence from the available devices installed in your system. A device enclosed in parenthesis indicates that it has been disabled in the corresponding type menu. Options for all three of these settings are available boot devices and Disabled. The devices to set are: • 1ST BOOT DEVICE • 2ND BOOT DEVICE • 3RD BOOT DEVICE • 4TH BOOT DEVICE and so on.
▶ Hard Disk Drives	This sub-menu specifies the boot device priority sequence from the available hard drives installed in your system.
1st ~ Drive	These settings specify the boot sequence from the available hard disk drives devices installed in your system. The devices to set are: • 1ST DRIVE • 2ND DRIVE • 3RD DRIVE • 4TH DRIVE and so on.
▶Removable Drives	This sub-menu specifies the boot device priority sequence from the available removable drives installed in your system.
1st ~ Drive	These settings specify the boot sequence from the available removable drive devices installed in your system. The devices to set are: • 1ST DRIVE • 2ND DRIVE • 3RD DRIVE • 4TH DRIVE and so on.
▶CD/DVD Drives	This sub-menu specifies the boot device priority sequence from the available CD/DVD drives installed in your system.

Table 6-13. Boot Menu

Menu Option	Description
1st ~ Drive	These settings specify the boot sequence from the available CD/DVD drive devices installed in your system. The devices to set are: • 1ST DRIVE • 2ND DRIVE • 3RD DRIVE • 4TH DRIVE and so on.
Retry Boot Devices	This option allows the system to retry boot devices. Options are Enabled or **Disabled**.

6-6   Exit Menu

Select the EXIT tab from AMI BIOS SETUP UTILITY screen to enter the EXIT BIOS SETUP screen. The options for the EXIT menu are shown in Table 6-14. You may also additionally press <ESC> to exit without saving or <F10> to save your settings and exit.

Table 6-14. Exit Menu

Menu Option	Description
Save Changes and Exit	When you have completed the system configuration changes, select this option to leave BIOS Setup and reboot the computer, so the new system configuration parameters can take effect. Select SAVE CHANGES AND EXIT from the EXIT menu and press <ENTER>.
Discard Changes and Exit	Select this option to quit BIOS Setup without making any permanent changes to the system configuration and reboot the computer. Select DISCARD CHANGES AND EXIT from the EXIT menu and press <ENTER>.
Discard Changes	Select this option and press <ENTER> to discard all the changes and return to AMI BIOS Utility Program.
Load Optimal Defaults	To set this feature, select LOAD OPTIMAL DEFAULTS from the EXIT menu and press <ENTER>. Then Select OK to allow BIOS to automatically load the OPTIMAL DEFAULTS as the BIOS Settings. The OPTIMAL SETTINGS are designed for maximum system performance, but may not work best for all computer applications.
Load Fail-Safe Defaults	To set this feature, select LOAD FAIL-SAFE DEFAULTS from the EXIT menu and press <ENTER>. The FAIL-SAFE settings are designed for maximum system stability, but not maximum performance.

Notes

Appendix A
BIOS POST Codes

A-1   BIOS POST Messages

During the Power-On Self-Test (POST), the BIOS will check for problems. If a problem is found, the BIOS will activate an alarm or display a message. The following is a list of such BIOS messages.

Table A-1. BIOS POST Messages

BIOS Message	Description
Failure Fixed Disk	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup. Find out if the fixed-disk type is correctly identified.
Stuck key	Stuck key on keyboard.
Keyboard error	Keyboard not working.
Keyboard Controller Failed	Keyboard controller failed test. May require replacing keyboard controller.
Keyboard locked - Unlock key switch	Unlock the system to proceed.
Monitor type does not match CMOS - Run SETUP	Monitor type not correctly identified in Setup
Shadow Ram Failed at offset: nnnn	Shadow RAM failed at offset **nnnn** of the 64k block at which the error was detected.
System RAM Failed at offset: nnnn	System RAM failed at offset **nnnn** of in the 64k block at which the error was detected.
Extended RAM Failed at offset: nnnn	Extended memory not working or not configured properly at offset **nnnn.**
System battery is dead - Replace and run SETUP	The CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System CMOS checksum bad - Default configuration used	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. The BIOS installed Default Setup Values. If you do not want these values, enter Setup and enter your own values. If the error persists, check the system battery or contact your dealer.
System timer error	The timer test failed. Requires repair of system board.
Real time clock error	Real-Time Clock fails BIOS hardware test. May require board repair.
Check date and time settings	BIOS found date or time out of range and reset the Real-Time Clock. May require setting legal date (1991-2099).

Table A-1. BIOS POST Messages (Continued)

BIOS Message	Description
Previous boot incomplete - Default configuration used	Previous POST did not complete successfully. POST loads default values and offers to run Setup. If the failure was caused by incorrect values and they are not corrected, the next boot will likely fail. On systems with control of **wait states**, improper Setup settings can also terminate POST and cause this error on the next boot. Run Setup and verify that the waitstate configuration is correct. This error is cleared the next time the system is booted.
Memory Size found by POST differed from CMOS	Memory size found by POST differed from CMOS.
Diskette drive A error Diskette drive B error	Drive A: or B: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
Incorrect Drive A type - run SETUP	Type of floppy drive A: not correctly identified in Setup.
Incorrect Drive B type - run SETUP	Type of floppy drive B: not correctly identified in Setup.
System cache error - Cache disabled	RAM cache failed and BIOS disabled the cache. On older boards, check the cache jumpers. You may have to replace the cache. See your dealer. A disabled cache slows system performance considerably.
CPU ID:	CPU socket number for Multi-Processor error.
EISA CMOS not writeable	ServerBIOS2 test error: Cannot write to EISA CMOS.
DMA Test Failed	ServerBIOS2 test error: Cannot write to extended **DMA** (Direct Memory Access) registers.
Software NMI Failed	ServerBIOS2 test error: Cannot generate software NMI (Non-Maskable Interrupt).
Fail-Safe Timer NMI Failed	ServerBIOS2 test error: Fail-Safe Timer takes too long.
device Address Conflict	Address conflict for specified **device.**
Allocation Error for: device	Run ISA or EISA Configuration Utility to resolve resource conflict for the specified **device**.
CD ROM Drive	CD ROM Drive identified.
Entering SETUP...	Starting Setup program
Failing Bits: nnnn	The hex number **nnnn** is a map of the bits at the RAM address which failed the memory test. Each 1 (one) in the map indicates a failed bit. See errors 230, 231, or 232 above for offset address of the failure in System, Extended, or Shadow memory.
Fixed Disk n	Fixed disk **n** (0-3) identified.
Invalid System Configuration Data	Problem with NVRAM (CMOS) data.
I/O device IRQ conflict	I/O device IRQ conflict error.
PS/2 Mouse Boot Summary Screen:	PS/2 Mouse installed.

Table A-1. BIOS POST Messages (Continued)

BIOS Message	Description
nnnn kB Extended RAM Passed	Where **nnnn** is the amount of RAM in kilobytes successfully tested.
nnnn Cache SRAM Passed	Where **nnnn** is the amount of system cache in kilobytes successfully tested.
nnnn kB Shadow RAM Passed	Where **nnnn** is the amount of shadow RAM in kilobytes successfully tested.
nnnn kB System RAM Passed	Where **nnnn** is the amount of system RAM in kilobytes successfully tested.
One or more I2O Block Storage Devices were excluded from the Setup Boot Menu	There was not enough room in the IPL table to display all installed I2O block-storage devices.
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 nnnn	Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**. Parity is a method for checking errors in binary data. A parity error indicates that some data has been corrupted.
Parity Check 2 nnnn	Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays **????**.
Press <F1> to resume, <F2> to Setup, <F3> for previous	Displayed after any recoverable error message. Press <F1> to start the boot process or <F2> to enter Setup and change the settings. Press <F3> to display the previous screen (usually an initialization error of an **Option ROM**, i.e., an add-on card). Write down and follow the information shown on the screen.
Press <F2> to enter Setup	Optional message displayed during POST. Can be turned off in Setup.
PS/2 Mouse:	PS/2 mouse identified.
Run the I2O Configuration Utility	One or more unclaimed block storage devices have the Configuration Request bit set in the LCT. Run an I2O Configuration Utility (e.g. the SAC utility).
System BIOS shadowed	System BIOS copied to shadow RAM.
UMB upper limit segment address: *nnnn*	Displays the address *nnnn* of the upper limit of **Upper Memory Blocks**, indicating released segments of the BIOS which can be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS successfully copied to shadow RAM.

A-2   BIOS POST Codes

This section lists the POST (Power-On Self-Test) codes for the AMI BIOS. POST codes are divided into two categories: recoverable and terminal.

Recoverable POST Errors

When a recoverable type of error occurs during POST, the BIOS will display an POST code that describes the problem. BIOS may also issue one of the following beep codes:

• **One long and two short beeps** – video configuration error
• **One repetitive long beep** – no memory detected

Terminal POST Errors

If a terminal type of error occurs, BIOS will shut down the system. Before doing so, BIOS will write the error to *port 80h*, attempt to initialize video and write the error in the top left corner of the screen.

The following is a list of codes that may be written to *port 80h*.

Uncompressed Initialization Codes

The uncompressed initialization checkpoint codes are listed in order of execution in table Table A-2.

Table A-2. Uncompressed Initialization Error Codes

Post Code	Description
D0h	The NMI is disabled. Power on delay is starting. Next, the initialization code checksum will be verified.
D1h	Initializing the DMA controller, performing the keyboard controller BAT test, starting memory refresh and entering 4 GB flat mode next.
D3h	Starting memory sizing next.
D4h	Returning to real mode. Executing any OEM patches and setting the Stack next.
D5h	Passing control to the uncompressed code in shadow RAM at E000:0000h. The initialization code is copied to segment 0 and control will be transferred to segment 0.
D6h	Control is in segment 0. Next, checking if <Ctrl> <Home> was pressed and verifying the system BIOS checksum. If either <Ctrl> <Home> was pressed or the system BIOS checksum is bad, next will go to checkpoint code E0h. Otherwise, going to checkpoint code D7h.

Bootblock Recovery Codes

The bootblock recovery checkpoint codes are listed in order of execution in Table A-3.

Table A-3. Bootblock Recovery Error Codes

Post Code	Description
E0h	The onboard floppy controller if available is initialized. Next, beginning the base 512 KB memory test.
E1h	Initializing the interrupt vector table next.
E2h	Initializing the DMA and Interrupt controllers next.
E6h	Enabling the floppy drive controller and Timer IRQs. Enabling internal cache memory.
Edh	Initializing the floppy drive.
Eeh	Looking for a floppy diskette in drive A:. Reading the first sector of the diskette.
Efh	A read error occurred while reading the floppy drive in drive A:.
F0h	Next, searching for the AMIBOOT.ROM file in the root directory.
F1h	The AMIBOOT.ROM file is not in the root directory.
F2h	Next, reading and analyzing the floppy diskette FAT to find the clusters occupied by the AMIBOOT.ROM file.
F3h	Next, reading the AMIBOOT.ROM file, cluster by cluster.
F4h	The AMIBOOT.ROM file is not the correct size.
E0h	The onboard floppy controller if available is initialized. Next, beginning the base 512 KB memory test.
E1h	Initializing the interrupt vector table next.
E2h	Initializing the DMA and Interrupt controllers next.
E6h	Enabling the floppy drive controller and Timer IRQs. Enabling internal cache memory.
Edh	Initializing the floppy drive.
Eeh	Looking for a floppy diskette in drive A:. Reading the first sector of the diskette.
Efh	A read error occurred while reading the floppy drive in drive A:.
F0h	Next, searching for the AMIBOOT.ROM file in the root directory.
F1h	The AMIBOOT.ROM file is not in the root directory.
F2h	Next, reading and analyzing the floppy diskette FAT to find the clusters occupied by the AMIBOOT.ROM file.
F3h	Next, reading the AMIBOOT.ROM file, cluster by cluster.
F5h	Next, disabling internal cache memory.
FBh	Next, detecting the type of flash ROM.

Table A-3. Bootblock Recovery Error Codes

Post Code	Description
FCh	Next, erasing the flash ROM.
FDh	Next, programming the flash ROM.
FFh	Flash ROM programming was successful. Next, restarting the system BIOS.

Uncompressed Initialization Codes

The following runtime checkpoint codes are listed in order of execution in Table A-4. These codes are uncompressed in F0000h shadow RAM.

Table A-4. Uncompressed Initialization Error Codes

Post Code	Description
03h	The NMI is disabled. Next, checking for a soft reset or a power on condition.
05h	The BIOS stack has been built. Next, disabling cache memory.
06h	Uncompressing the POST code next.
07h	Next, initializing the CPU and the CPU data area.
08h	The CMOS checksum calculation is done next.
0Ah	The CMOS checksum calculation is done. Initializing the CMOS status register for date and time next.
0Bh	The CMOS status register is initialized. Next, performing any required initialization before the keyboard BAT command is issued.
0Ch	The keyboard controller input buffer is free. Next, issuing the BAT command to the keyboard controller.
0Eh	The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test.
0Fh	The initialization after the keyboard controller BAT command test is done. The keyboard command byte is written next.
10h	The keyboard controller command byte is written. Next, issuing the Pin 23 and 24 blocking and unblocking command.
11h	Next, checking if <End or <Ins> keys were pressed during power on. Initializing CMOS RAM if the Initialize CMOS RAM in every boot AMIBIOS POST option was set in AMIBCP or the <End> key was pressed.
12h	Next, disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2.
13h	The video display has been disabled. Port B has been initialized. Next, initializing the chipset.
14h	The 8254 timer test will begin next.
19h	Next, programming the flash ROM.

Table A-4. Uncompressed Initialization Error Codes

Post Code	Description
1Ah	The memory refresh line is toggling. Checking the 15 second on/off time next.
2Bh	Passing control to the video ROM to perform any required configuration before the video ROM test.
2Ch	All necessary processing before passing control to the video ROM is done. Looking for the video ROM next and passing control to it.
2Dh	The video ROM has returned control to BIOS POST. Performing any required processing after the video ROM had control
23h	Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors.
24h	The configuration required before interrupt vector initialization has completed. Interrupt vector initialization is about to begin.
25h	Interrupt vector initialization is done. Clearing the password if the POST DIAG switch is on.
27h	Any initialization before setting video mode will be done next.
28h	Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next.
2Ah	Bus initialization system, static, output devices will be done next, if present. See the last page for additional information.
2Eh	Completed post-video ROM test processing. If the EGA/VGA controller is not found, performing the display memory read/write test next.
2Fh	The EGA/VGA controller was not found. The display memory read/write test is about to begin.
30h	The display memory read/write test passed. Look for retrace checking next.
31h	The display memory read/write test or retrace checking failed. Performing the alternate display memory read/write test next.
32h	The alternate display memory read/write test passed. Looking for alternate display retrace checking next.
34h	Video display checking is over. Setting the display mode next.
37h	The display mode is set. Displaying the power on message next.
38h	Initializing the bus input, IPL, general devices next, if present. See the last page of this chapter for additional information.
39h	Displaying bus initialization error messages. See the last page of this chapter for additional information.
3Ah	The new cursor position has been read and saved. Displaying the Hit <DEL> message next.
3Bh	The Hit <DEL> message is displayed. The protected mode memory test is about to start.

Table A-4. Uncompressed Initialization Error Codes

Post Code	Description
40h	Preparing the descriptor tables next.
42h	The descriptor tables are prepared. Entering protected mode for the memory test next.
43h	Entered protected mode. Enabling interrupts for diagnostics mode next.
44h	Interrupts enabled if the diagnostics switch is on. Initializing data to check memory wraparound at 0:0 next.
45h	Data initialized. Checking for memory wraparound at 0:0 and finding the total system memory size next.
46h	The memory wraparound test is done. Memory size calculation has been done. Writing patterns to test memory next.
47h	The memory pattern has been written to extended memory. Writing patterns to the base 640 KB memory next.
48h	Patterns written in base memory. Determining the amount of memory below 1 MB next.
49h	The amount of memory below 1 MB has been found and verified.
4Bh	The amount of memory above 1 MB has been found and verified. Checking for a soft reset and clearing the memory below 1 MB for the soft reset next. If this is a power on situation, going to checkpoint 4Eh next.
4Ch	The memory below 1 MB has been cleared via a soft reset. Clearing the memory above 1 MB next.
4Dh	The memory above 1 MB has been cleared via a soft reset. Saving the memory size next. Going to checkpoint 52h next.
4Eh	The memory test started, but not as the result of a soft reset. Displaying the first 64 KB memory size next.
4Fh	The memory size display has started. The display is updated during the memory test. Performing the sequential and random memory test next.
50h	The memory below 1 MB has been tested and initialized. Adjusting the displayed memory size for relocation and shadowing next.
51h	The memory size display was adjusted for relocation and shadowing.
52h	The memory above 1 MB has been tested and initialized. Saving the memory size information next.
53h	The memory size information and the CPU registers are saved. Entering real mode next.
54h	Shutdown was successful. The CPU is in real mode. Disabling the Gate A20 line, parity, and the NMI next.
57h	The A20 address line, parity, and the NMI are disabled. Adjusting the memory size depending on relocation and shadowing next.
58h	The memory size was adjusted for relocation and shadowing. Clearing the Hit <DEL> message next.

Table A-4. Uncompressed Initialization Error Codes

Post Code	Description
59h	The Hit <DEL> message is cleared. The <WAIT...> message is displayed. Starting the DMA and interrupt controller test next.
60h	The DMA page register test passed. Performing the DMA Controller 1 base register test next.
62h	The DMA controller 1 base register test passed. Performing the DMA controller 2 base register test next.
65h	The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.
66h	Completed programming DMA controllers 1 and 2. Initializing the 8259 interrupt controller next.
67h	Completed 8259 interrupt controller initialization.
7Fh	Extended NMI source enabling is in progress.
80h	The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next.
81h	A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.
82h	The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.
83h	The command byte was written and global data initialization has completed. Checking for a locked key next.
84h	Locked key checking is over. Checking for a memory size mismatch with CMOS RAM data next.
85h	The memory size check is done. Displaying a soft error and checking for a password or bypassing WINBIOS Setup next.
86h	The password was checked. Performing any required programming before WINBIOS Setup next.
87h	The programming before WINBIOS Setup has completed. Uncompressing the WINBIOS Setup code and executing the AMIBIOS Setup or WINBIOS Setup utility next.
88h	Returned from WINBIOS Setup and cleared the screen. Performing any necessary programming after WINBIOS Setup next.
89h	The programming after WINBIOS Setup has completed. Displaying the power on screen message next.
8Ch	Programming the WINBIOS Setup options next.
8Dh	The WINBIOS Setup options are programmed. Resetting the hard disk controller next.
8Fh	The hard disk controller has been reset. Configuring the floppy drive controller next.
91h	The floppy drive controller has been configured. Configuring the hard disk drive controller next.

Notes

Table A-4. Uncompressed Initialization Error Codes

Post Code	Description
95h	Initializing the bus option ROMs from C800 next. See the last page of this chapter for additional information.
96h	Initializing before passing control to the adaptor ROM at C800.
97h	Initialization before the C800 adaptor ROM gains control has completed. The adaptor ROM check is next.
98h	The adaptor ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control.
99h	Any initialization required after the option ROM test has completed. Configuring the timer data area and printer base address next.
9Ah	Set the timer and printer base addresses. Setting the RS-232 base address next.
9Bh	Returned after setting the RS-232 base address. Performing any required initialization before the Coprocessor test next.
9Ch	Required initialization before the Coprocessor test is over. Initializing the Coprocessor next.
9Dh	Coprocessor initialized. Performing any required initialization after the Coprocessor test next.
9Eh	Initialization after the Coprocessor test is complete. Checking the extended keyboard, keyboard ID, and Num Lock key next. Issuing the keyboard ID command next.
A2h	Displaying any soft errors next.
A3h	The soft error display has completed. Setting the keyboard typematic rate next.
A4h	The keyboard typematic rate is set. Programming the memory wait states next.
A5h	Memory wait state programming is over. Clearing the screen and enabling parity and the NMI next.
A7h	NMI and parity enabled. Performing any initialization required before passing control to the adaptor ROM at E000 next.
A8h	Initialization before passing control to the adaptor ROM at E000h completed. Passing control to the adaptor ROM at E000h next.
A9h	Returned from adaptor ROM at E000h control. Performing any initialization required after the E000 option ROM had control next.
Aah	Initialization after E000 option ROM control has completed. Displaying the system configuration next.
Abh	Uncompressing the DMI data and executing DMI POST initialization next.
B0h	The system configuration is displayed.

Table A-4. Uncompressed Initialization Error Codes

Post Code	Description
B1h	Copying any code to specific areas.
00h	Code copying to specific areas is done. Passing control to INT 19h boot loader next.

Notes

Disclaimer

The products sold by Supermicro are not intended for and will not be used in life support systems, medical equipment, nuclear facilities or systems, aircraft, aircraft devices, aircraft/emergency communication devices or other critical systems whose failure to perform be reasonably expected to result in significant injury or loss of life or catastrophic property damage. Accordingly, Supermicro disclaims any and all liability, and should buyer use or sell such products for use in such ultra-hazardous applications, it does so entirely at its own risk. Furthermore, buyer agrees to fully indemnify, defend and hold Supermicro harmless for and against any and all claims, demands, actions, litigation, and proceedings of any kind arising out of or related to such ultra-hazardous use or sale.